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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/699,127

10/30/2003

Hyun Woo Song

2013P115

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03/16/2005

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EXAMINER

PRENTY, MARK V

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/699,127

Applicant(s)

SONG ET AL.

Examiner

MARK V. PRENTY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 1,7,8 and 14-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date October 30, 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

This Office Action is in response to the papers filed on October 30, 2003.

Independent claim 1 is objected to because "an oxide layer a nitride layer" should read "an oxide layer, a nitride layer." Correction is required.

Claims 1, 3-6, 9 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Choquette et al. (United States Patent 5,493,577 – hereafter Choquette).

With respect to independent claim 1, Choquette discloses a semiconductor optical device (see the entire patent, including the Fig. 4 disclosure) comprising: a first semiconductor layer 14 of a first conductivity type (see column 6, line 40) which is formed on a semiconductor substrate 12 and includes one or more material layers; a second semiconductor layer 18 which is formed on the first semiconductor layer and includes one or more material layers; and a third semiconductor layer 16 of a second conductivity type (see column 6, lines 49-54) which is formed on the second semiconductor layer and includes one or more material layers, wherein one or more layers among the first semiconductor layer, the second semiconductor layer and the third semiconductor layer have a mesa structure, a lateral portion of at least one of the material layers 42 constituting the first semiconductor layer, the second semiconductor layer, and the third semiconductor layer is recessed, and the recess is partially or wholly filled with an oxide layer, a nitride layer or a combination of them (see col. 17, lines 1-4, for example).

Claim 1 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 3, Choquette's oxide layer is formed of Al_2O_3 (i.e., oxidized aluminum - see column 17, lines 26-28).

Claim 3 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 4, when Choquette's first semiconductor layer 14 is a p-type semiconductor layer, the third semiconductor layer 16 is an n-type semiconductor layer and when the first semiconductor layer is an n-type semiconductor layer, the third semiconductor layer is a p-type semiconductor layer (see column 6, lines 40-54).

Claim 4 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 5, Choquette's second semiconductor layer 18 is one of a p-type semiconductor layer, an n-type semiconductor layer, and an undoped semiconductor layer (see column 8, lines 17-25).

Claim 5 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 6, Choquette's first and third semiconductor layers 14 and 16 are confinement-conducting regions, and the second semiconductor layer 18 is a gain region.

Claim 6 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to independent claim 9, Choquette discloses a semiconductor optical device (see the entire patent, including the Fig. 4 disclosure) comprising: confinement-conducting regions 14 and 16 having semiconductor layers, each of which includes one or more material layers; and a gain region 18 having a semiconductor layer, which is formed between the confinement-conducting regions and includes one or more material layers, wherein the confinement-conducting regions and the gain region have a mesa structure (note column 8, lines 38-48), and a lateral portion of at least one of the material layers 42 constituting the semiconductor layers of the confinement-conducting regions and the gain region is recessed, and the recess is partially or wholly filled with an oxide layer, a nitride layer or a combination of them (see col. 17, lines 1-4, for example).

Claim 9 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 11, Choquette's oxide layer is formed of Al_2O_3 (i.e., oxidized aluminum - see column 17, lines 26-28).

Claim 11 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

With respect to dependent claim 12, the semiconductor layer constituting the confinement-conducting regions 14 and 16 is one of a p-type semiconductor layer, an n-type semiconductor layer and a combination of them (see column 6, lines 40-54).

Claim 12 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

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With respect to dependent claim 13, Choquette's semiconductor layer constituting the gain region 18 is one of a p-type semiconductor layer, an n-type semiconductor layer, and an undoped semiconductor layer (see column 8, lines 17-25).

Claim 13 is thus rejected under 35 U.S.C. 102(b) as being anticipated by Choquette.

Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette et al. (United States Patent 5,493,577 – hereafter Choquette). Specifically, claim 2 depends on independent claim 1, which is rejected under 35 U.S.C. 102(b) as being anticipated by Choquette (see above). The above explanation of the rejection of independent claim 1 under 35 U.S.C. 102(b) as being anticipated by Choquette is hereby incorporated by reference into this rejection of dependent claim 2 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. The difference, therefore, between device claim 2 and Choquette's device is a process one (i.e., their oxide layers are formed by atomic layer deposition and oxidation, respectively). Insofar as claim 2's oxide layer appears to be structurally the same as or similar to Choquette's oxide layer (in view of their similar use, for example), claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. See MPEP 2113.

Claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette et al. (United States Patent 5,493,577 – hereafter Choquette). Specifically, claim 10 depends on

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independent claim 9, which is rejected under 35 U.S.C. 102(b) as being anticipated by Choquette (see above). The above explanation of the rejection of independent claim 9 under 35 U.S.C. 102(b) as being anticipated by Choquette is hereby incorporated by reference into this rejection of dependent claim 10 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. The difference, therefore, between device claim 10 and Choquette's device is a process one (i.e., their oxide layers are formed by atomic layer deposition and oxidation, respectively). Insofar as claim 10's oxide layer appears to be structurally the same as or similar to Choquette's oxide layer (in view of their similar use, for example), claim 10 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Choquette. See MPEP 2113.

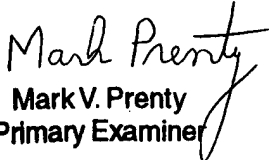
Claims 7, 8 and 14-17 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record does not disclose or suggest the allowable semiconductor optical device taken as a whole, including the recess partially or wholly filled with an oxide layer, a nitride layer or a combination of them.

United States Patent Application Publication 2004/0099857 is related to this application.

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Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.


Mark V. Prenty
Primary Examiner